GEORGIA ACADEMY

JROTC STEM LEADERSHIP ACADEMY

CADET IMPACT REPORT 2023

The **JROTC STEM Leadership Academy** is a six-day residential summer camp that helps meet today's workforce needs by engaging a diverse population of high school students— JROTC Cadets going into 9th-12th grades —in activities that open pathways to STEM learning and careers.

The Academy seeks to increase Cadet awareness of local high-paying, in-demand STEM career opportunities and in their understanding about what it takes to secure these jobs. To do this, the Academy integrates several activities that inform JROTC Cadets about STEM jobs, pique their interest to pursue these jobs, give them hands-on application of STEM concepts in a team setting, and develop 21st Century workforce skills.

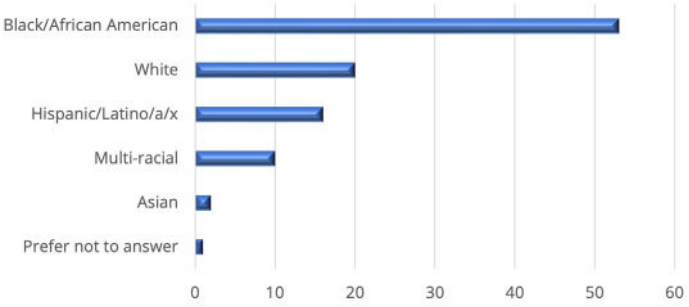
In 2023, the Academy focused on Advanced Manufacturing industries and related STEM on the Ground curriculum, in which Cadets designed, built, and tested remote-controlled, multi-purpose robots that completed several missions, each with increasing complexity.

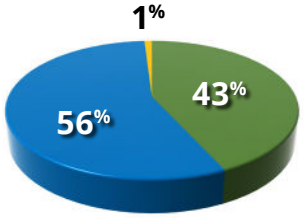
ACTIVITIES

- STEM Design Challenges
- Visits to Industries, Colleges/Universities, and Educational Venues
- JROTC Cadet Leadership Challenge Activities
- Inspirational Guest Speakers

25 HIGH SCHOOLS | **120** CADETS

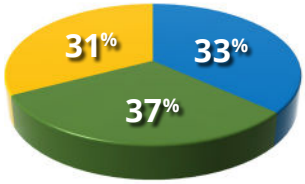
PERCENT ACADEMY CADETS BY RACE/ETHNICITY





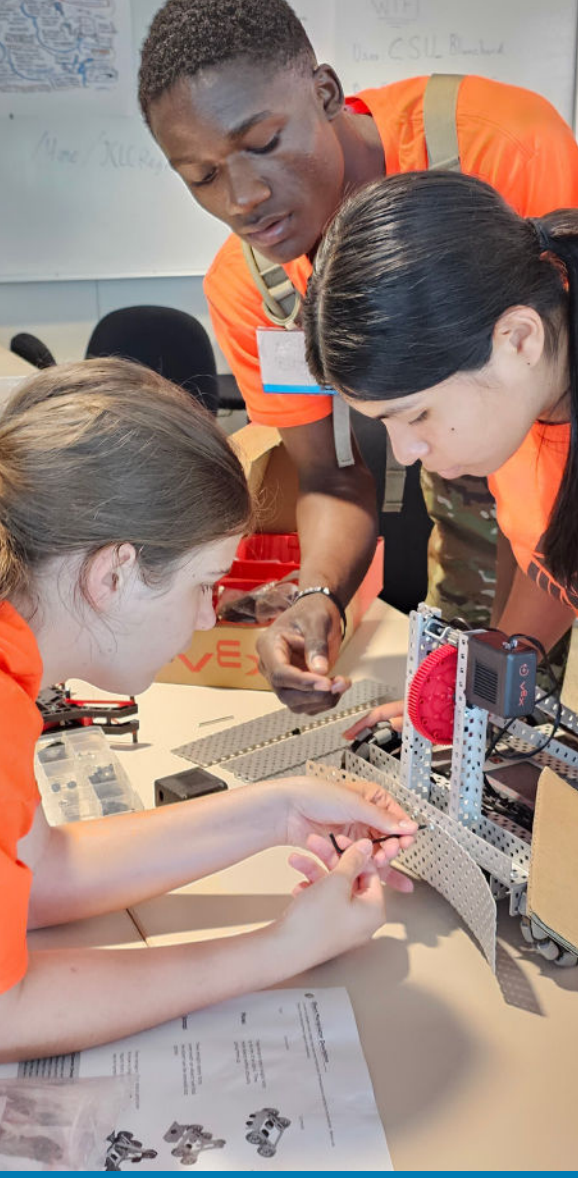
CADETS BY GENDER

- Male
- Prefer not to say
- Female



CADETS BY GRADE

9 10 11



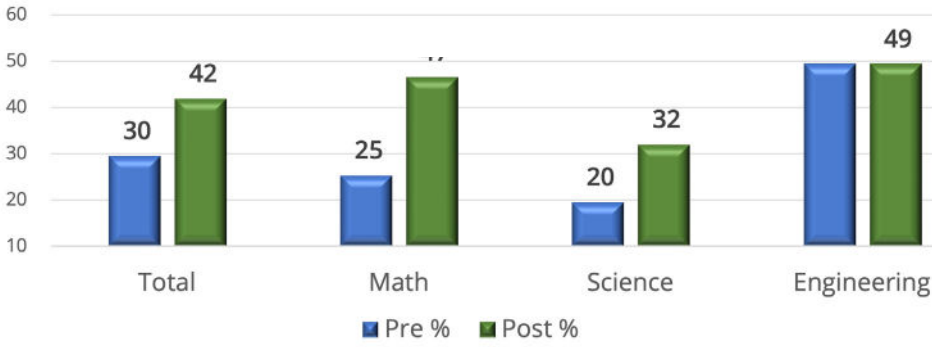
The JROTC STEM Leadership Academy engaged Cadets in developing and valuing teamwork, communication, and leadership skills needed to be successful contributors and collaborators. Carefully structured activities designed to do this included:

- Winning Colors Personality Assessment
- Team Building Activities
- STEM Design Challenges
- JROTC Fitness Challenges and Sports Nights

STEM on the Ground Team Design Challenge

Academy Cadets applied the STEM concepts of Simple and Complex Machines, Gear and Gear Ratios, Inverse Relationships (lifting force versus speed), and the Engineering Design Process during their team design challenges. Pre- and post-assessment results indicated that cadets achieved statistically significant gains in STEM content knowledge overall, with gains in math and science being greatest.

CADET CORRECT ANSWERS TO STEM CONTENT QUESTIONS



How did Cadets respond to teamwork experiences?

"At the beginning when a teammate was being a bit too independent, I just let them keep doing what they were doing. But as the week went by, I learned to speak up and let them know the problem so we could be more collaborative as a team."

11TH GRADER
CARVER HIGH SCHOOL

"This experience will help me go for the robotics team at my school. I never knew that building a robot would be so interesting that I might want to do this in the future!"

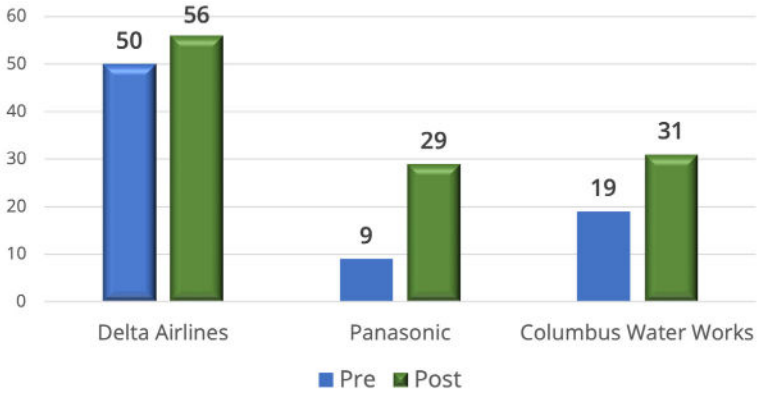
10TH GRADER, CORETTA SCOTT KING HIGH SCHOOL

Industry Site Visits

To raise Cadet awareness of how STEM is used in the region's manufacturing industry, the Academy arranged visits to Columbus Waterworks System, Panasonic, Delta, Hartsfield International Airport, Clay National Guard, and Lockheed Martin. Cadets heard from human resource personnel about hiring requirements, key traits needed, training programs offered, and salaries of high-demand jobs from technicians to engineers.

Results from pre- and post-assessments showed that Cadets' awareness of and interest in local STEM jobs increased. At the end of the Academy, 94% of Cadets strongly agreed or agreed that there are good-paying local STEM jobs compared to 82% of Cadets at the beginning of the Academy.

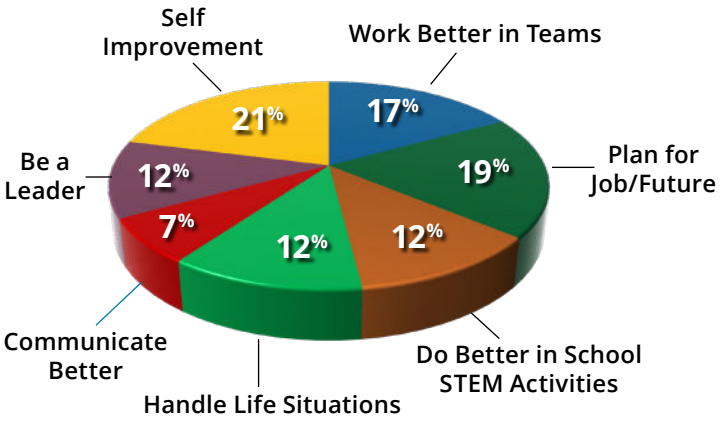
NUMBER OF CADETS ABLE TO DESCRIBE INDUSTRY



Educational Field Trips

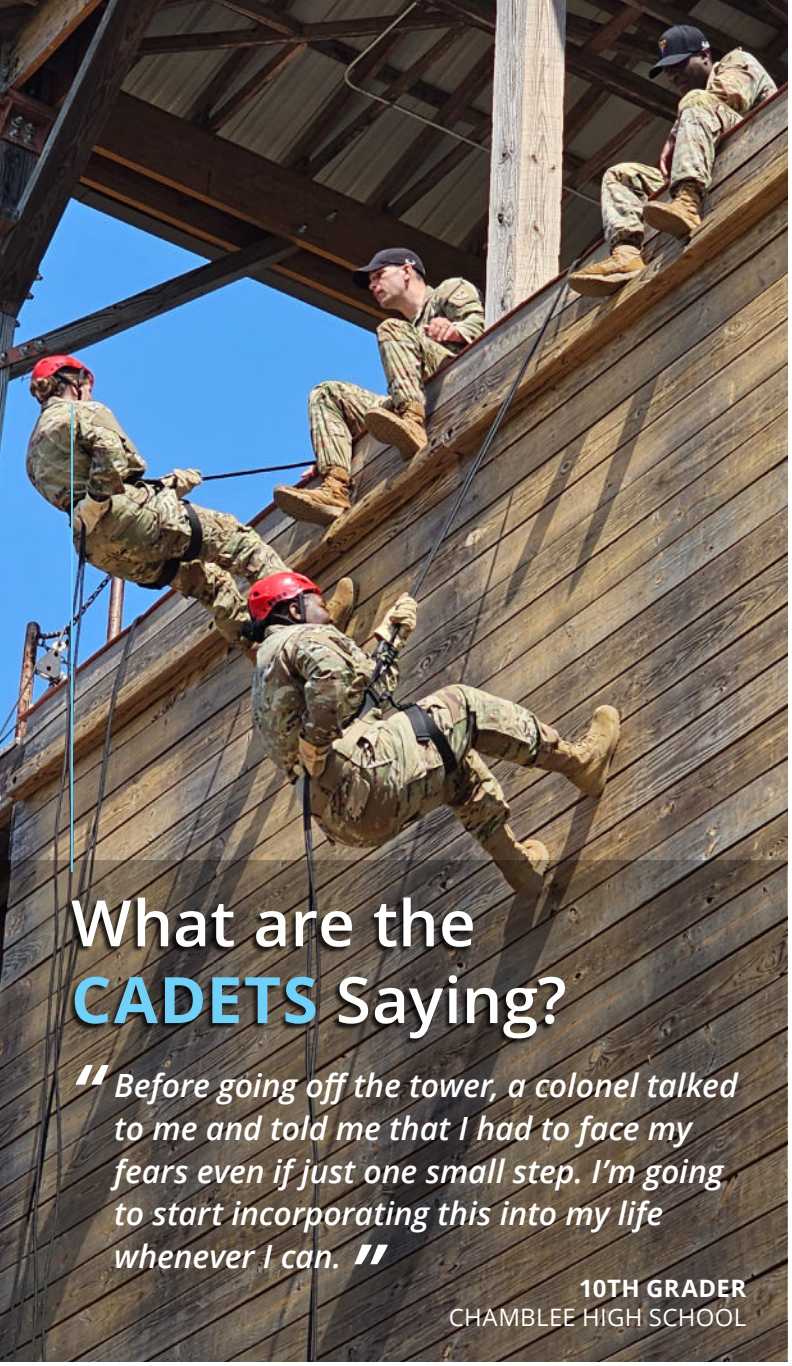
Cadets resided at Columbus State University during the Academy, which gave them a taste of campus life. Cadets also visited the Georgia Institute of Technology where they heard about expectations, fields of study, student support, and enrollment.

HOW WILL ACADEMY EXPERIENCES HELP CADETS IN THE FUTURE?



"*I learned about the behind the scenes of college applications and what colleges are looking for that can help me when writing my essay.*"

11TH GRADER
D.M. THERRELL HIGH SCHOOL



What are the CADETS Saying?

"Before going off the tower, a colonel talked to me and told me that I had to face my fears even if just one small step. I'm going to start incorporating this into my life whenever I can."

10TH GRADER
CHAMBLEE HIGH SCHOOL

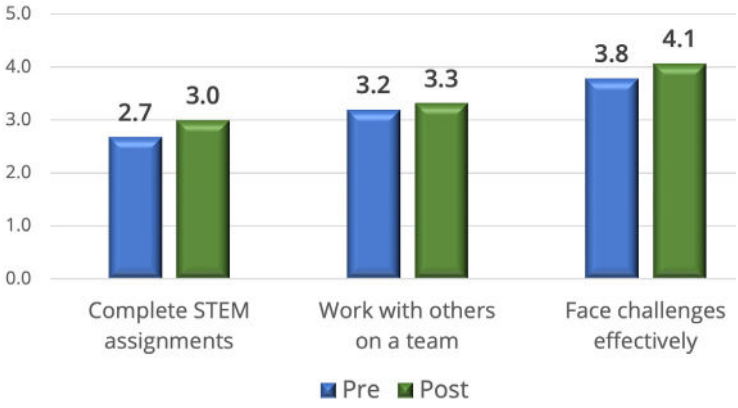
JROTC Cadet Leadership Challenge Activities

The foundation of the Academy lies in the JROTC culture and character education curriculum. Cadets who attended the Academy received additional exposure to that curriculum and culture by participating in several activities:

- Rappelling
- Drownproofing
- Land Navigation
- Leader's Reaction Course
- Physical Training

Forty percent of Cadets stated in their journal reflections that their most favorite part of the Academy was the JROTC activities. Combining JROTC challenge activities and STEM design challenges resulted in linked experiences that helped build academic, team, and leadership skills.

CADETS' BELIEF IN THEIR ABILITY TO...



Overall Conclusions

Based on the analysis of quantitative and qualitative data collected, the 2023 JROTC STEM Leadership Academy increased a diverse group of Cadets' awareness of and interest in local STEM career opportunities and increased their confidence in being able to enter a STEM career field. Cadets made gains in math and science knowledge and in experience working with technology, which increases the likelihood they will succeed in STEM courses and careers. Cadets achieved gains in teamwork, leadership, communication, and other 21st Century workforce skills and experienced growth in confidence, courage, and personal responsibility. All combined, the Academy provided experiences that opened pathways to STEM learning and careers.

center for STEM Education

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EOE/F/M/VETS/DISABILITY